## LISTING OF THE CLAIMS

The following is a complete listing of the claims, incorporating all previous and current amendments to the claims.

1. (Original) Fluid processing apparatus comprising a fluid-handling manifold comprising:

a manifold body having at least a first fluid duct and a second fluid duct, the first fluid duct and the second fluid duct being in fluid communication with each other at a microfluidic junction of the fluid-handling manifold, the microfluidic junction being operative to pass a local fluid flow comprising fluid received from the first duct and fluid received from the second duct; and

a transducer operative to generate ultrasonic acoustic traveling wave radiation into fluid in the microfluidic junction from an active surface toward a non-reflective boundary of the microfluidic junction not more than 300 microns from the active surface.

2. (Original) The fluid processing apparatus in accordance with claim 1 wherein the transducer is operative to generate ultrasonic acoustic traveling wave radiation into the microfluidic junction substantially orthogonal to a local fluid flow through the microfluidic junction.

3. (Original) The fluid processing apparatus in accordance with claim 1 further comprising a fluidic component integral with the fluid-handling manifold and operative on fluid in the manifold body.

4. (Original) The fluid processing apparatus in accordance with claim 3 wherein the fluid component is a second transducer.

5. (Original) The fluid processing apparatus in accordance with claim 4 wherein the second transducer is operative to generate ultrasonic acoustic standing wave radiation toward a reflective boundary of the manifold body.

6. (Original) The fluid processing apparatus in accordance with claim 4 wherein the transducer and the second transducer are axially spaced from each other in the direction of flow through the microfluidic junction and are radially aligned with each other along the microfluidic junction and the second transducer is operative to generate ultrasonic acoustic traveling wave radiation into the microfluidic junction substantially orthogonal to local fluid flow through the microfluidic junction, from an active surface to a non-reflective boundary of the manifold body not more than 300 microns from the active surface.

7. (Original) The fluid processing apparatus in accordance with claim 3 wherein the fluid component is a mechanical mixer operative to mix fluid in the manifold body.

8. (Original) The fluid processing apparatus in accordance with claim 3 wherein the fluid component is a sensor operative to detect a condition of fluid in the manifold body.

9. (Original) The fluid processing apparatus in accordance with claim 8 wherein the sensor is operative to detect the temperature of fluid in the manifold body.

10. (Original) The fluid processing apparatus in accordance with claim 8 wherein the sensor is operative to detect the pressure of fluid in the manifold body.

11. (Original) The fluid processing apparatus in accordance with claim 8 wherein the sensor is operative to detect an optical property of fluid in the manifold body.

12. (Original) The fluid processing apparatus in accordance with claim 8 wherein the sensor is operative to detect fluid flow rate of fluid in the manifold body.

13. (Original) The fluid processing apparatus in accordance with claim 8 wherein the sensor is a dielectric constant sensor.

14. (Original) The fluid processing apparatus in accordance with claim 8 wherein the sensor is a viscosity sensor.

15. (Original) The fluid processing apparatus in accordance with claim 8 wherein the sensor is a turbidity sensor.

16. (Original) The fluid processing apparatus in accordance with claim 3 wherein the

fluid component is a valve operative to control a flow of fluid in the manifold body.

17. (Original) The fluid processing apparatus in accordance with claim 16 wherein the microfluidic junction is in the valve and the transducer is operative to generate ultrasonic acoustic traveling wave radiation into the valve. 18.The fluid processing apparatus in accordance with claim 3 wherein the fluid component is a fluid pump.

19. (Original) The fluid processing apparatus in accordance with claim 3 wherein the fluid component is a heater.

20. (Original) The fluid processing apparatus in accordance with claim 3 wherein the fluid component is a cooler.

21. (Original) The fluid processing apparatus in accordance with claim 1 wherein the manifold body is a laminated plastic body.

22. (Original) The fluid processing apparatus in accordance with claim 1 wherein the manifold body is a laminated body, at least one lamination of the laminated body being formed of PEEK .

23. (Original) The fluid processing apparatus in accordance with claim 1 wherein the manifold body is a monolithic body of plastic or glass.

24. (Original) The fluid processing apparatus in accordance with claim 1 wherein said non-reflective boundary of the microfluidic junction is an air-liquid interface.

25. (Original) The fluid processing apparatus in accordance with claim 1 wherein the transducer comprises a piezoelectric transducer.

26. (Original) The fluid processing apparatus in accordance with claim 25 wherein the transducer comprises piezoelectric material overlying a surface of the manifold body.

27. (Original) The fluid processing apparatus in accordance with claim 1 wherein the active surface of the transducer is piezoelectric material forming at least a portion of the surface of the microfluidic junction.

28. (Original) The fluid processing apparatus in accordance with claim 1 wherein said non-reflective boundary of the microfluidic junction is a wall of the manifold body.

29. (Original) The fluid processing apparatus in accordance with claim 1 wherein the transducer comprises a magnetostrictive transducer.

30. (Original) The fluid processing apparatus in accordance with claim 1 wherein the transducer comprises an electrostatic transducer.

31. (Original) The fluid processing apparatus in accordance with claim 1 wherein the transducer comprises a thermo-acoustic transducer.

32. (Original) The fluid processing apparatus in accordance with claim 1 wherein the microfluidic junction is an elongate fluid channel having a constant cross-section that is circular, semi-circular, square, rectangular or triangular.

33. (Original) The fluid processing apparatus in accordance with claim 1 wherein the non-reflective boundary of the microfluidic junction is glass, plastic, metal, ceramics or silica.

34. (Original) The fluid processing apparatus in accordance with claim 1 wherein the operative frequency of the transducer is between 6-200 MHz.

35. (Original) The fluid processing apparatus in accordance with claim 1 wherein the fluid body further comprises a visually transparent window providing visual observation of fluid in the manifold body.

36. (Original) The fluid processing apparatus in accordance with claim 1 wherein the manifold body is operative at fluid pressure in the microfluidic junction greater than 25 psi.

37. (Original) The fluid processing apparatus in accordance with claim 1 wherein the microfluidic junction is operative at fluid pressure in the microfluidic junction of at least 1,000 psi.

38. (Original) The fluid processing apparatus in accordance with claim 1 wherein the microfluidic junction is operative at fluid pressure in the microfluidic junction of at least 6,000 psi.

39. (Original) The fluid processing apparatus in accordance with claim 1 wherein the microfluidic junction is operative at fluid pressure in the microfluidic junction of at least 10,000 psi.

40. (Original) The fluid processing apparatus in accordance with claim 1 further comprising fluid in the microfluidic junction.

41. (Original) The fluid processing apparatus in accordance with claim 1 wherein the microfluidic junction of the fluid-handling manifold is at a T-connection.

42. (Original) The fluid processing apparatus in accordance with claim 1 wherein the microfluidic junction of the fluid-handling manifold is at a Y-connection.

43. (Original) Fluid processing apparatus comprising a fluid-handling manifold comprising:

a laminated plastic manifold body having at least a first fluid duct and a second fluid duct, the first fluid duct and the second fluid duct being in fluid communication with each other at a microfluidic junction of the fluid-handling manifold, the microfluidic junction being operative to pass a local fluid flow comprising fluid received from the first duct and fluid received from the second duct;

a transducer operative to generate ultrasonic acoustic traveling wave radiation into fluid in the microfluidic junction from an active surface toward a non-reflective boundary of the microfluidic junction; and

a sensor integral with the fluid-handling manifold and operative to detect a condition of fluid in the manifold body.

44. (Withdrawn) A method of mixing fluid comprising:

providing a fluid processing apparatus comprising a fluid-handling manifold comprising: a manifold body having at least a first fluid duct and a second fluid duct, the first fluid duct and the second fluid duct being in fluid communication with each other at a microfluidic junction of the fluid-handling manifold, the microfluidic junction being operative to pass a local fluid flow comprising fluid received from the first duct and fluid received from the second duct; and

a transducer operative to generate ultrasonic acoustic traveling wave radiation into fluid in the microfluidic junction from an active surface toward a non-reflective boundary of the microfluidic junction not more than 300 microns from the active surface;

introducing fluid into the microfluidic junction; and

energizing the transducer to generate ultrasonic acoustic traveling wave radiation into the fluid in the microfluidic junction at a frequency and power level effective to pass from the active surface to the non-reflective boundary.

45. (Withdrawn) The method of mixing fluid in accordance with claim 41 wherein the transducer is energized at 6-200 MHz.

46. (Withdrawn) The method of mixing fluid in accordance with claim 41 wherein the transducer is energized at 6-200 MHz at 10-30 volts.

47. (Withdrawn) The method of mixing fluid in accordance with claim 41 wherein the transducer is further operative to generate an ultrasonic acoustic standing wave in fluid in the manifold body, and the method further comprises energizing the transducer to generate an ultrasonic acoustic standing wave in fluid in the manifold body.

48. (Withdrawn) The method of mixing fluid in accordance with claim 41 wherein the fluid-handling manifold further comprises a second transducer and a reflective boundary opposite the second transducer, and the method further comprises energizing the second transducer to generate an ultrasonic acoustic standing wave in fluid in the manifold body.

49. (Withdrawn) The method of mixing fluid in accordance with claim 44 wherein the transducer and the second transducer are simultaneously energized.

50. (Withdrawn) The method of mixing fluid in accordance with claim 41 wherein the energizing the transducer to generate ultrasonic acoustic traveling wave radiation comprises activating the transducer in a pulsed fashion.

51. (Withdrawn) The method of mixing fluid in accordance with claim 41 wherein the energizing the transducer to generate ultrasonic acoustic traveling wave radiation comprises activating the transducer in a constant fashion.

52. (Withdrawn) The method of mixing fluid in accordance with claim 41 wherein the energizing the transducer to generate ultrasonic acoustic traveling wave radiation comprises activating the transducer in any combination of pulsed and constant fashions.

53. (Withdrawn) The method of mixing fluid in accordance with claim 41 wherein the energizing the transducer to generate ultrasonic acoustic traveling wave radiation into the fluid comprises energizing the transducer to generate ultrasonic acoustic traveling wave radiation orthogonal to the direction of flow of the fluid in the microfluidic junction.

54. (Withdrawn) A method of mixing fluid comprising:

providing a fluid processing apparatus comprising a fluid-handling manifold comprising:

a laminated plastic manifold body having at least a first fluid duct and a second fluid duct, the first fluid duct and the second fluid duct being in fluid communication with each other at a microfluidic junction of the fluid-handling manifold, the microfluidic junction being operative to pass a local fluid flow comprising fluid received from the first duct and fluid received from the second duct; and

a transducer operative to generate ultrasonic acoustic traveling wave radiation into fluid in the microfluidic junction from an active surface toward a non-reflective boundary of the microfluidic junction;

introducing fluid into the microfluidic junction;

energizing the transducer to generate ultrasonic acoustic traveling wave radiation into the fluid in the microfluidic junction at a frequency and power level effective to pass from the active surface to the non-reflective boundary; and

a sensor integral with the fluid-handling manifold and operative to detect a condition of fluid in the manifold body.

**— REMAINDER OF THIS PAGE INTENTIONALLY LEFT BLANK —**